ISSN 1346-7565 Acta Phytotax. Geobot. 59 (3): 219–222 (2008)

A New Species of *Neottia* (Orchidaceae) from the Tanzawa Mountains, Japan

TAKAHIRO YAGAME[1]*, TERUO KATSUYAMA[2] and TOMOHISA YUKAWA[3]

*[1]Orchid Museum Takamori, 512-73 Izuhara, Takamori, Shimoina, Nagano 399-3107, Japan. *yagame@ran-museum.jp (author for correspondence); [2]Kanagawa Prefectural Museum of Natural History, 499 Iryuda, Odawara Kanagawa 250-0031, Japan; [3]Tsukuba Botanical Garden, National Museum of Nature and Science, 1-1, Amakubo 4, Tsukuba, Ibaraki 305-0005, Japan*

A new species, *Neottia inagakii* Yagame, Katsuy. & T. Yukawa, is described from the Tanzawa Mountains, Kanagawa Prefecture, Japan. *Neottia inagakii* is morphologically similar to *N. kiusiana* but can be distinguished by the smaller and nearly closed flower, the adaxially folded, 2- or 3-lobed epichile of the lip, the erect anther lacking a filament, and the cylindrical column.

Key words: Japan, *Neottia*, new species, Orchidaceae, Tanzawa Mountains, taxonomy

The genus *Neottia* Guett. (type species: *Neottia nidus-avis* (L.) Rich.) comprises about 9 species distributed widely in the north temperate zone of the Old World (Pearce & Cribb 2002). The genus is circumscribed by a combination of characters, such as 1) achlorophyllous habit, 2) densely crowded, fleshy, short roots, 3) an erect stem covered with clasping sheaths, 4) an elongated column with a suberect anther 5) two, soft, mealy pollinia, and 6) a sensitive rostellum. In Japan, the following taxa are recognized: *N. asiatica* Ohwi, *N. kiusiana* T. Hashim. & Hatus., *N. nidus-avis* (L.) Rich. var. *nidus-avis*, and *N. nidus-avis* var. *mandshurica* Kom.

In 2002 Mr. Seishyu Inagaki found flowering plants of species of *Neottia* on the forest floor in the Tanzawa Mountains, situated in central Japan, and recognized that they did not match any known species of *Neottia* from Japan (Katsuyama & Inagaki 2007). Since our investigations of the morphology of the plants confirmed his observation, we herein describe it as a new species.

Neottia inagakii Yagame, Katsuy. & T. Yukawa, **sp. nov.** (Figs. 1, 2)

Affinis *Neottiae kiusianae*, sed floribus fere clausis minoribusque, anthera erecta et columna cylindrica differt.

Typus. JAPAN, Honshu: Kanagawa Pref., Aiko-gun, Kiyokawa-mura, Miyagase, Mt. Matsugoya-no-kashira, alt. 900 m, June 24, 2007, *Seishyu Inagaki & Teruo Katsuyama s.n.* (holo- KPM; iso- TNS).

Plants terrestrial, achlorophyllous, glossy, creamy white, 8–20 cm tall. Roots fascicled, ageotropic, facing upward, cylindrical, 1–2 cm long, 1.5–2 mm in diam. Stem erect, with 2–4 loose sheaths, 6–7 mm in diam. at base, 3–4 mm in diameter at base of inflorescence. Sheaths spatulate, subacute, membranaceous, connate basally with stem, upper two longer than basal ones, 1.5–3 cm long, 3–8 mm wide. Inflorescence terminal, with 10–20 flowers, rachis sparsely glandular hairy, 7–9 cm long. Floral bracts membranaceous; lowermost 2 surpassing the flowers, similar in shape to upper 2 sheaths, spatulate, subacute, 5–7 nerved, 2.5–3 cm long, 3–4 mm wide; remaining bracts linear-lanceolate, acute-acuminate, 1 nerved, 5–12 mm long. Flowers nearly closed creamy white except pedicel and ovary brownish cream. Pedicel terete, glabrous, 3–5 mm long. Dorsal sepal obovate, entire-crenulate, obtuse, cucullate, 1- to 3-nerved, 2.7–3 mm long, 2–2.5 mm wide when spread out. Lateral sepals strongly cupped, obliquely obovate, obtuse, cucullate, 1-nerved, 2.6–3 mm long, 2–3 mm wide when spread out. Petals obliquely

FIG. 1. Flowering plant of *Neottia inagakii* Yagame, Katsuy. & T. Yukawa on the floor of *Abies firma* forest (from the type locality).

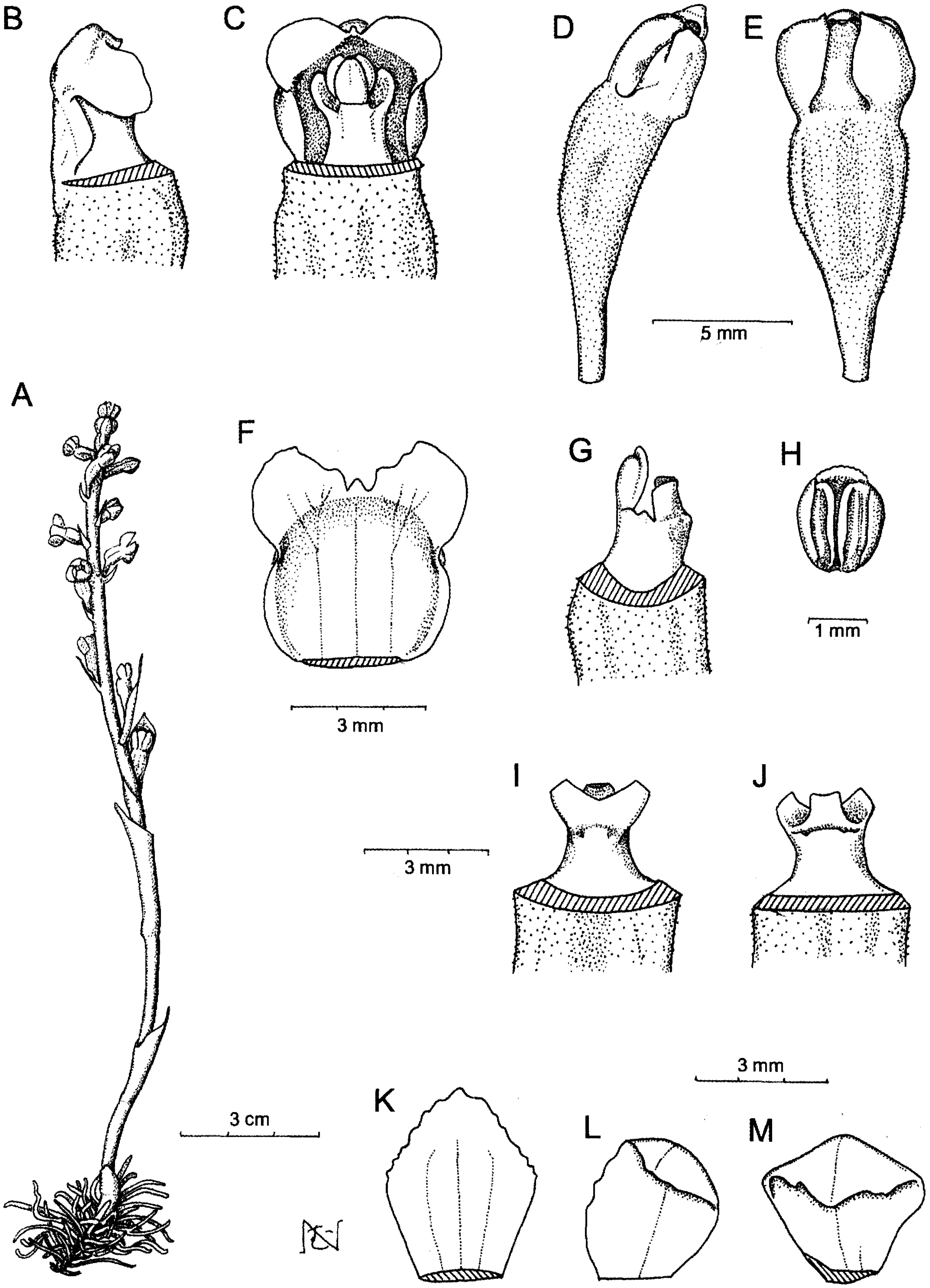

FIG. 2. *Neottia inagakii* Yagame, Katsuy. & T. Yukawa. A: Habit. B: Column and lip, side view. C: Column and lip, dorsal view. D: Flower, side view. E: Flower, ventral view. F: Lip. G: Column and anther cap, side view. H: Anther, ventral view. I: Column, ventral view. J: Column, dorsal view. K: Dorsal sepal. L: Petal. M: Lateral sepal. Drawn from a paratype (*S. Inagaki & T. Yagame s.n.*) by M. Nakajima.

obovate, obtuse, cucullate, 1-nerved, 2.5–3.3 mm long, 1.5–1.9 mm wide. Lip oblong, 3-nerved, 3.4–4.2 mm long, 2.4–3 mm wide when spread out; hypochile, quadrate; epichile 2- or 3-lobed, somewhat variable in shape, adaxially folded, oblong to ovate, obtuse. Ovary clavate, with glandular hairs, 3–7 mm long, 2–3 mm wide. Column cylindrical, 2.1–2.5 mm long; stigma lobes erect, rectangular to triangular, obtuse; rostellum transverse–ovate to triangular. Anther erect at anthesis, filament lacking. Anther cap hemispherical, 1.1–1.2 mm long, 1–1.1 mm wide; pollinia 2, mealy. Capsule 10–12 mm long, 5–6 mm wide.

Flowering season. Mid-June to early July.

Japanese name. Tanzawa-sakane-ran (Katsuyama & Inagaki 2007)

Habitat. Floor of *Abies firma* forest.

Distribution. Endemic to the Tanzawa Mountains, Kanagawa Prefecture, Honshu, Japan.

Etymology. Neottia inagakii is named for Seishyu Inagaki, who discovered it.

Other specimens examined. JAPAN, Honshu, Kanagawa Pref., Aiko-gun, Kiyokawa-mura, Miyagase, Mt. Matsugoya-no-kashira, alt. 900 m, June 20, 2006, *Seishyu Inagaki & Takahiro Yagame s.n.* (TNS 8500437); Aiko-gun, Kiyokawa-mura, Miyagase, Mt. Matsugoya-no-kashira, alt. 900 m, July 1, 2006, *Seishyu Inagaki & Teruo Katsuyama s.n.* (KPM NA0126331); Ashigarashimo-gun, Yamakita-cho, from Sonbutsu-no-do-taira to Mt. To-no-dake, July 23, 1995, *Miyako Morikawa s.n.* (KPM NA0103550); Ashigarashimo-gun, Yamakita-cho, Yoduku, Orito Pass, June 26, 1999, *Ayako Yamamoto s.n.* (KPM NA0116375).

Neottia inagakii is most closely related to *N. kiusiana* (Hashimoto & Hatusima 1991) but can be distinguished by the following combination of characters: 1) The flowers of *N. inagakii* are nearly closed, but those of *N. kiusiana* open widely; 2) the flowers of *N. inagakii* are smaller than those of *N. kiusiana*; 3) the epichil of *N. inagakii* is 2- or 3-lobed and variable in shape, whereas the epichile of *N. kiusiana* is 2-lobed and inversely trapeziform; 4) The epichil of *N. inagakii* is folded adaxially, but the epichile of *N. kiusiana* opens flat; 5) the anther of *N. inagakii* is erect and without a filament at anthesis, while the anther of *N. kiusiana* is decumbent adaxially and with a short filament at anthesis; 6) the column of *N. inagakii* is cylindrical, but the column of *N. kiusiana* is conical. *Neottia inagakii* also has an affinity with *N. hypocastanoptica* Y. N. Lee (Lee 2002), an obscure species endemic to Cheju Island, Korea, which is also closely related to *N. kiusiana*. The patent perianth lobes and shape of the lip readily discriminate *N. hypocastanoptica* from *N. inagakii*.

We thank Mr. Seishyu Inagaki for his kind help in sampling the material and Ms. Mutsuko Nakajima for preparing the illustration. This study was partly supported by a Grant-in-Aid to Scientific Research from the Japan Society for the Promotion of Science (No.17370033) and a research grant from the National Museum of Nature and Science.

References

Hashimoto, T. & S. Hatusima. 1991. A new *Neottia* (Orchidaceae) species from Kyushu, Japan. Ann. Tsukuba Bot. Gard. (10): 41–44.

Katsuyama, T & S. Inagaki. 2007. An unknown *Neottia* (Orchidaceae) species from the Tanzawa Mountains. Flora Kanagawa (64): 796–797. (in Japanese)

Lee, Y.-N. 2002. Flora of Korea, ed. 4. Kyo-Hak, Seoul. (in Korean)

Pearce, N. R. & P. J. Cribb. 2002. *Neottia. In*: Pearce, N. R. & P. J. Cribb (eds.), Fl. Bhutan 3(3): 53–55.

Received April 19, 2008; accepted August 2, 2008